

WESTEL* COLOR MODULE WCM-200



The Westel Color Module WCM-200, when added to the Westel* Television Recorder WTR-100, permits full color operation. Signals are recorded and reproduced with full color fidelity, without the use of additional auxiliary equipment.

The Westel Television Recorder was designed entirely from the start to meet all the stringent requirements of NTSC color signal transmission systems. The excellence of the signal system, tape and head motion stability, and head performance, all make the WTR-100 ideal for color use. In addition, because it is a single head machine, problems of color banding inherent in every multi-head machine are completely eliminated. You can add color capability to the basic monochrome machine by simply plugging in the WCM-200 set of modularized color electronics.

The color system provides final electronic time base correction on a line-by-line basis, synchronized to an external reference, and permits direct recovery of NTSC signals.

In keeping with the Westel philosophy of designing in stability and reliability, and of reducing operating adjustments to a minimum, the Color Module requires, in addition to standard Recorder controls, only three controls:

Mode Selector Switch
Reference Selector Switch
Color Reference Phase

SPECIFICATIONS

Video Input:	0.5 to 5.0 volts composite, 75-ohm unbalanced (Recorder input).
Video Output:	1.0 volt composite into 75-ohm unbalanced line, sending end terminated.
Bandwidth:	10 cps to 4.2 Mcps ± 2 db.
Signal-to-noise:	39 db peak-to-peak signal to rms noise on interchanged tapes.
External Reference Input:	75-ohm unbalanced, 1 to 4 volts.
Differential Gain:	Less than 5%.
Differential Phase:	Less than 5° at 3.58 Mcps.
Color Phase Error:	Less than 3°.
K Factor:	2% maximum.
Low Frequency Linearity:	Better than 3%, blanking to white.

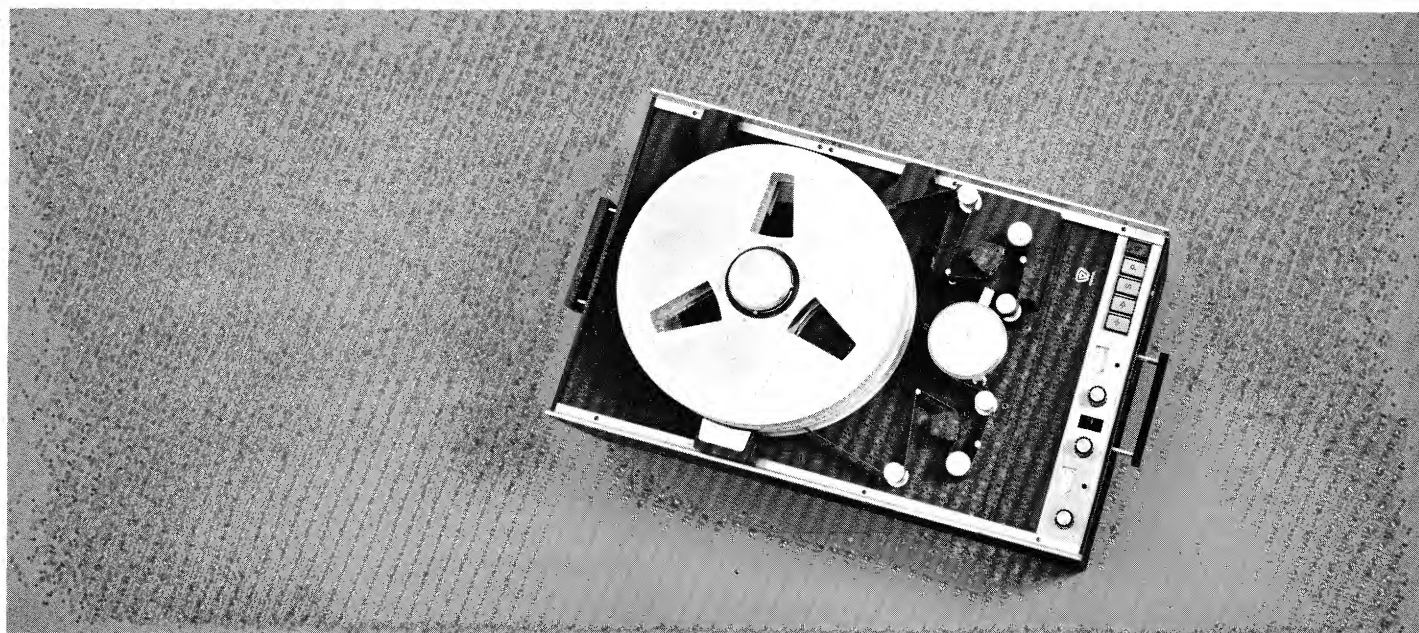
WARRANTY

Westel Company warrants that all products manufactured by them, with the exception of video magnetic heads, are free from defects in material and workmanship for a period of one year from date of receipt by the buyer when used under normal conditions. Video heads are warranted for 250 operational hours or one year, whichever occurs first.

Refer to the Operation Manual for the full warranty.

Westel Company reserves the right to change specifications without notice or obligation.

WESTEL* TELEVISION RECORDER MODEL WTR-100



The Westel Television Recorder WTR-100 is a professional broadcasting quality machine that meets all standards of the television industry for picture quality and time base stability. It will, without auxiliary equipment, record and playback full-band monochrome signals of the 525-line, 60-field standard U.S. broadcast system, and is adaptable for use on other common line-standard systems, as well as a variety of power sources. With the addition of the Westel* Color Module WCM-200, it will record and playback standard NTSC color signals. Two high-quality audio tracks are provided. Electronic editing capability is also available as a built-in option. The WTR-100 uses the unique proprietary Coniscan* video recording system that permits the use of a single recording head with attendant simplification, compactness, low initial cost and operating economy.

GENERAL

DIMENSIONS: 27 1/2" by 17 1/2" by 9".

VOLUME: 2 1/2 cubic feet.

WEIGHT: Approximately 75 pounds.

MOUNTING CONFIGURATIONS: Standard model is supplied in a case for table-top operation. Optional rack available for vertically mounting in a standard 19" rack. Optional horizontal rack available that functions as a pull-out drawer in standard 19" rack.

RECORDING FORMAT: With the Coniscan recording system each field of video information is recorded as a single and continuous track. Two high-quality audio tracks and a control track are recorded longitudinally along one edge of the tape.

TAPE TYPE: Uses standard 1" television tape.

TAPE WIND: Normal tape pack will be B-wind supply to B-wind takeup, but provisions are incorporated to permit A-wind on supply reel if necessary.

REEL TYPE: Any standard NAB reel, 6 1/2 to 14 inch diameter.

REEL MOUNTING: Coaxially mounted with top reel support hinged to facilitate loading. Reel hold-downs are an integral part of the recorder.

TAPE SPEED: 10 ips.

RECORDING TIMES (Based on standard NAB and SMPTE tape packs):

6 1/2" reel:	14 minutes
8" reel:	33 minutes
10 1/2" reel:	72 minutes
12 1/2" reel:	110 minutes
14" reel:	144 minutes

START TIME: Less than 1 second to full lock-in of video head.

REWIND TIME: Rewind and Fast Forward speeds are at least 15 times play speed, with tape speed and tension fully servo controlled at all times.

TAPE MOTION CONTROL: Transport is entirely controlled by active servo driven reel, capstan and drum motors which generate all tape drive and braking functions. All motors are identical high-torque, low-inertia printed circuit type. No solenoids, brakes, slipping clutches or similar mechanical devices are used in control of tape motion.

TAPE TENSION CONTROL: Tape tension is controlled in all modes by high-gain reel servos. In Playback, dynamic correction of tape tension to compensate for "chomp" and "chew" is accomplished by active servoing of the capstan motors.

INTERNAL SYNC SYSTEM: The recorder is unique in that it contains a full-scale sync generator. In playback mode this is keyed to the signal off tape and regenerates the complete sync structure of the reproduced signal, eliminating the need for an external video processing amplifier. In addition, it eliminates all the discontinuities, transients and dropouts of sync information during the head tape crossover which commonly occur in other recorders.

CONTROLS:

Transport Controls: All controls are fully interlocked electrically. The normal record mode, consisting of Video, plus both audio channels, can only be initiated after pressing the Play button, and will be terminated by pressing any other button. Record combinations other than normal may be selected by a control on the secondary panel, and initiated by a special record button. Lock-out circuitry prevents recording before tape and drum speed reach correct operating speeds. End of tape sensing and automatic shut-off are provided. **Primary Controls:** Controls are divided into two groups and the primary control panel provides all normal operating controls: Power On-Off, Video Tracking, Audio Channel 1 Input Level, Audio Channel 1 Output Level, and lighted push buttons for Play, Record, Stop, Rewind and Fast Forward. **Secondary Controls:** Setup and monitoring controls are concealed under a hinged panel, and include Audio Channel 2 Input Level, Audio Channel 2 Output Level, Audio Meter Channel Selector Switch, Sync Selector Switch, Record Mode Selector Switch, Edit Mode Selector Switch, Special Record Switch, Remote Local Control Switch, and Video Input Level Control. **Remote Control:** Play, Record and Stop functions may be remotely controlled with a plug-in unit. This unit shows lighted indication of the mode selected.

INDICATORS: Two meters are provided. Number 1 indicates video input level during record, and video tracking during playback. Number 2 indicates audio level and may be switched to monitor either channel. A footage counter with instant push button reset, and a running hour meter are also provided.

VIDEO HEAD: The single video head is of unique construction, and replacement in the field is simple and inexpensive.

INPUT AND OUTPUT CONNECTORS: Input and output connectors are mounted on the end panel and recessed to prevent damage. These are, Video Input, Video Input (looped through), Video Output #1, Video Output #2, External Sync Input, External Sync Input (looped through), Composite Sync Output, Audio Channel 1 Input, Audio Channel 1 Microphone Input, Audio Channel 1 Line Output, Audio Channel 2 Line Input, Audio Channel 2 Microphone Input, Audio Channel 2 Line Output, AC Power Input, AC Utility Outlet, and Remote Control Connector.

POWER REQUIREMENTS

105 to 130 volts, or 210 to 260 volts by selection of appropriate transformer tap, and line frequency of 50 to 65 cps. Power consumption is 300 watts maximum.

WARM-UP TIME: Instantaneous. Silicon solid state devices are used throughout with over 60% of the active elements in integrated circuits.

ENVIRONMENT: The recorder will operate, and will record and reproduce (including interchanged tapes) at any temperature between 32° F. and 100° F., and any humidity between 30% and 85% RH. These limits are set by the characteristics of the magnetic tape. Rugged construction permits normal trans-shipment of the cased model by ordinary vehicles without additional protection as long as the latching cover is in place.

SERVICE CONSIDERATIONS: Highly-simplified design and the use of silicon devices, integrated circuits and digital circuitry in many areas provide high inherent reliability. The entire skin of the unit is removable to provide easy access to all parts while the machine is operational. Mechanical elements are grouped in modules which are easily removed and interchanged between machines. Electronic circuitry is mounted on military-quality, glass-epoxy etched circuit boards which plug into card bays on one-inch centers. These are quickly accessible behind a hinged panel and reduce most fault tracing to a simple matter of interchanging plug-in cards. Space is

provided in the card bay for adding optional features at a later date. The Power supply is removable as a unit and if desired can be operated outside the machine.

PERFORMANCE SPECIFICATIONS

Specifications apply to any recording made on a Westel recorder when it is reproduced on any other Westel recorder.

VIDEO PERFORMANCE

BANDWIDTH: 10 cps to 4.2 Mcps ± 2 db.

SIGNAL/NOISE RATIO: 42 db peak-to-peak signal to rms noise on interchanged tapes.

INPUT LEVEL: 0.5 to 5.0 volts composite, 75 ohms, positive-going video. Up to 1.0 volt offset allowable.

OUTPUT LEVEL: 1.0 volt composite, positive-going video, clamped, into 75 ohm line.

STABILITY: Time base stability and sync structure fully meet all FCC requirements for both short-term and long-term periods.

AUDIO PERFORMANCE

NUMBER OF CHANNELS: Two, identical, completely selectable.

BANDWIDTH: 60 cps to 12 Kcps ± 2 db.

SIGNAL/NOISE RATIO: 45 db.

INTERCHANNEL CROSSTALK: -50 db.

INPUT LEVELS: Two selectable inputs per channel. Low level microphone, -40 dbm. Line input, +4 dbm at 600 ohms. Provision for optional plug-in line transformers.

OUTPUT LEVELS: +8 dbm into 600 ohm line.

FLUTTER: 0.25% rms, 30 cps to 250 cps.

ACCESSORY DEVICES

ELECTRONIC EDITING: Electronic editing function is available as a built-in option. This permits the video, and/or audio tracks to be edited in any combination.

COLOR ELECTRONICS: The addition of Westel Color Module Model WCM-200 to the basic monochrome machine permits recording of NTSC color signals.

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